A New Species and a New Combination in the Genus *Parodiolyra* (Poaceae: Bambusoideae: Olyreae)

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ABSTRACT. *Parodiolyra colombiensis*, endemic to eastern Colombia, is described and illustrated. It differs from the three currently recognized species of *Parodiolyra* in its pitted female lemmas and in its 3-nerved lower female glumes. Its filiform female pedicels, thickened rachilla internode between the female glumes, prolongation of the rachilla between the glume and the anthoecium, and small, awnless female spikelets are characters it shares with the previously known species of *Parodiolyra*. Because *Olyra micrantha* possesses these last four characters (except its female spikelets are awned), and in addition has a relatively short hilum, it is transferred to *Parodiolyra*. Because *P. colombiensis* and *P. micrantha* share pitted lemmas, they are believed to be more closely related to each other than to any other species in the genus *Parodiolyra*. A key to the five species of *Parodiolyra* is provided.

In 1992 Davidse received a grass specimen (*Restrepo & Matapi 467*) as part of a collection for routine identification that appeared to be an undescribed species of *Parodiolyra*. The defining characters of the genus *Parodiolyra* are (Soderstrom & Zuloaga, 1989): (1) female spikelets fall entire by disarticulating below the glumes; (2) female pedicels are filiform, not clavate; (3) a conspicuous, thickened internode is present between the lower and upper glume; (4) there is a prolongation of the rachilla between the upper glume and the anthoecium; (5) the hilum extends for only ½–¾ the length of the caryopsis, not its entire length. The *Restrepo & Matapi 467* collection had female spikelets with the first four characters. However, these spikelets were young and without caryopses, which makes it impossible to ascertain the hilum type of the new species. After consultation with Zuloaga, we decided to delay the description of the new species in the hope that we might be able to study more mature female spikelets from a new collection. In the meantime the site of the original collection was revisited early in 1999 by María Victoria Arbelaez (HUA) with the intent to re-collect this species. However, she reported (pers. comm.) that the original population had been destroyed in order to expand the airstrip. We were recently able to study duplicates of the original collection, which (although also without caryopses) were more complete and slightly more mature; this allowed us to strengthen our initial conclusions. Since this species grows in a remote area and it may be a long time before it is re-collected, it seems prudent now to report our findings. Even though some uncertainty remains about its generic classification, since we do not know its hilum type, we now name it in order to make this undoubtedly previously undescribed species available.

Parodiolyra colombiensis Davidse & Zuloaga, sp. nov. TYPE: Colombia. Caquetá: Regi6n de Araracuara, alrededores de la pista aérea, 00.25′S, 72.30′W, 200–300 m, 11 Nov. 1991, hierba, raquillas de la infrutescencia moradas, frutos verdes, *D. Restrepo & A. Matapi 467* (holotype, COAH-017796; isotypes, COAH-020068, MO-05102566). Figures 1, 2.

Gramen perenne, monoecium; culmis superis nodis ramificantibus; laminae ovatae-lanceolatae, 8–14.5 cm longae, 1.7–3.6 cm latae, glabratae, basi asymmetricae; pseudopetioli 0.2 mm longi. Inflorescentiae paniculatae, laxae, 6–10 cm longae. Spiculae femineae ellipsoideae, 4–5 mm longae, 1.3 mm latae, glumis inter se inaequalibus; gluma infera 3-nervia, nervis tessellatis; gluma supera 5-nervia, nervis tessellatis; anthoecia ellipsoidea, 3.4 mm longa, 1.4 mm lata, excavata; lemma 5-nervium, apice pilosum; palea 2-nervia. Spiculae masculae lanceolatae, 4 mm longae, 0.7 mm latae, scabrae; lemma 3-nervium, acuminatum; palea 2-nervia, stamina 3.

Perennial monoecious herb. *Culms* branching at the upper nodes; internodes cylindrical, 3–7 cm long, rigid, hollow, glabrous; nodes shortly pubescent or glabrous, dark, compressed. *Sheaths* striate, one margin ciliate, otherwise glabrous; auricles membranous, up to 4 mm long, brownish, the mar-

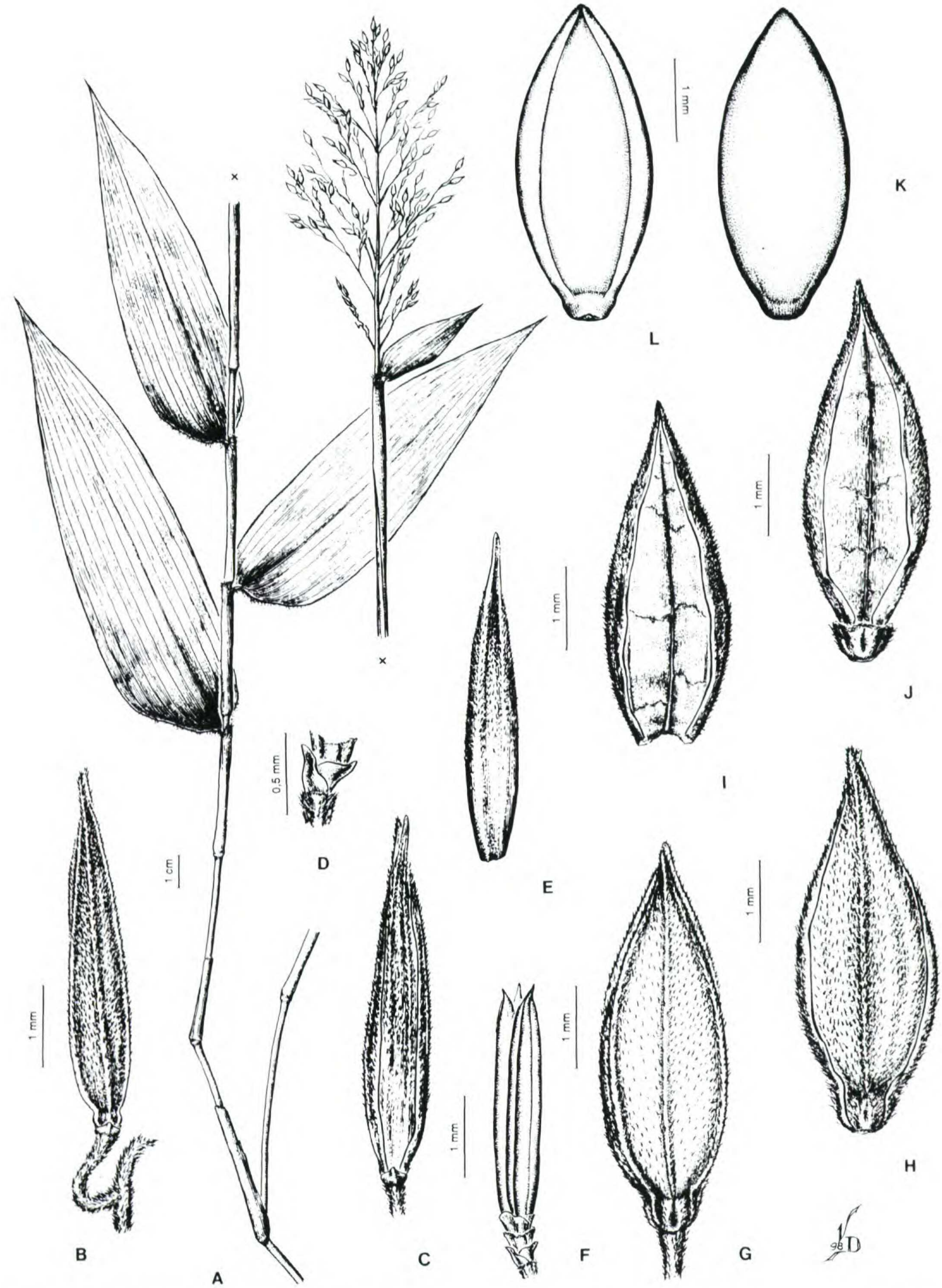

Figure 1. *Parodiolyra colombiensis* Davidse & Zuloaga. —A. Habit. —B. Male spikelet, lemma view. —C. Male spikelet, palea view. —D. Male spikelet, detail of lower and upper glume. —E. Palea of male spikelet. —F. Male flower. —G. Female spikelet, lower glume view. —H. Female spikelet, upper glume view. —I. Lower female glume, ventral view. —J. Upper female glume, ventral view. —K. Female anthoecium, dorsal view. —L. Female anthoecium, ventral view. (*Restrepo & Matapi 467.*)

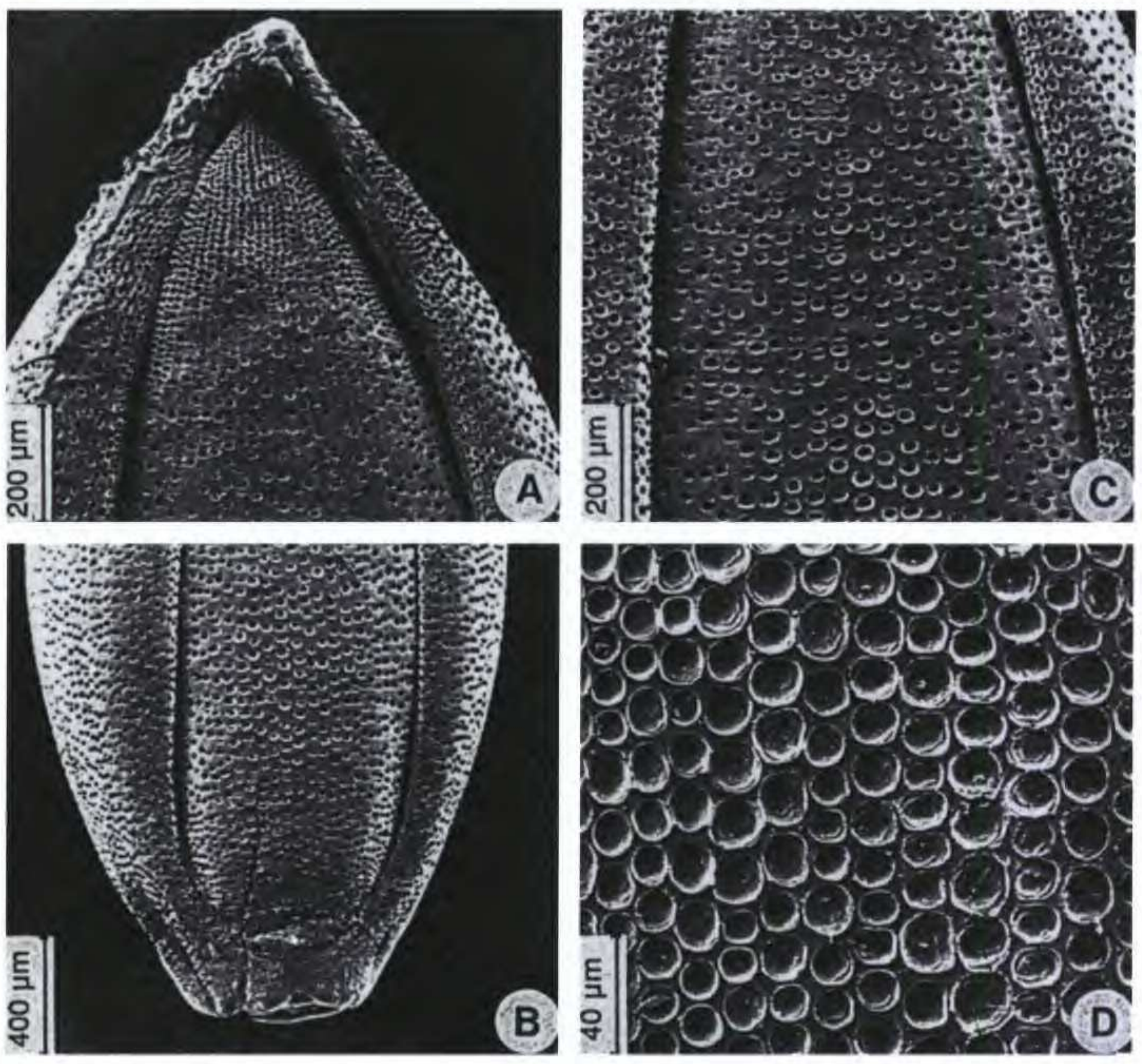

Figure 2. Detail of the female anthoecium of *Parodiolyra colombiensis*. —A. Apex of pitted lemma and palea, lemma with bottle-like microhairs. —B. Detail of base. —C. Middle portion of palea and borders of the lemma. —D. Detail of pitted area in the apical portion of the palea. (*Restrepo & Matapi 467*.)

gins ciliate. *Ligules* small, membranous-ciliate. *Blades* ovate-lanceolate, 8–14.5 cm long, 1.7–3.6 cm wide, flat, basally truncate and asymmetric, the apex acuminate, the lower margins ciliate or glabrous, otherwise scabrous, glabrous on the rest of its surface; pseudopetiole brownish, ca. 0.2 mm long, the adaxial surface densely pilose, the abaxial surface glabrous. *Inflorescence* a panicle 6–10 cm long, lax and open, terminal and exserted, sometimes with one additional, axillary, slightly smaller, partially exserted panicle; branches 1–6 per node, the uppermost branches bearing only female spikelets, the branches in the lower half of the panicle bearing both female and male spikelets, with the male spikelets borne below the female spikelets toward the base of the branches, the lowest branch sometimes bearing only male spikelets; *main axis* terete, scaberulous or sparsely hispid, purplish, the axis of the branches smooth, glabrous or sparsely hispid; pedicels of the male and female spikelets similar, not thickened, scaberulous, 1.5–7 mm long, purplish. *Female spikelets* narrowly ellipsoid, 4–5 mm long, 1.3 mm wide, disarticulating below the glumes; lower and upper glumes subequal, acuminate, with a 0.6-mm-long, thickened internode between them. *Lower glume* 4–5 mm long, scabrous on the outer surface and toward the apex of the inner surface, 3-nerved, the nerves anastomosing. *Upper glume* 4.2–4.6 mm long, scabrous on the outer surface and toward the apex on the inner surface, 5-nerved, the nerves anastomosing. *Rachilla internode* between the upper glume and anthoecium somewhat elongated and slender (a stipe). *Anthoecium* ellipsoid, 3.4 mm long, 1.4 mm wide, shorter than the lower and upper glume, indurated, stramineous, pitted, with rounded excavations over the entire surface, the lemma with conspicuous bottle-like microhairs at the apex, 5-nerved; lodicules 3, truncate, 0.4 mm long. *Caryopsis* unknown. *Male spikelets* lanceolate, 4 mm long, 0.7 mm wide, purplish, with 2 small glumes at the base; lemma 3-nerved, acuminate, scabrous; palea 2-nerved, scabrous; stamens 3, the anthers 2.3–3 mm long.

The species is only known from the type collection. The Araracuara region lies in an area of low sandstone mesas in southeastern Colombia. This area has a mosaic of vegetation types and has not been well collected.

The size of the plant is not known. It probably has erect, self-supporting culms, but notes on its habit are not available.

Although male spikelets of the Olyreae typically lack glumes, the occasional occurrence of rudimentary glumes has been also reported in *P. lateralis* (J. Presl ex Nees) Soderstrom & Zuloaga by Soderstrom and Zuloaga (1989).

The characteristic bottle-like microhairs present at the apex of the female lemma in *P. colombiensis* are also conspicuous in both *P. luetzelburgii* and *P. ramosissima*.

Excluding the unknown hilum character, *P. colombiensis* differs from the three currently recognized species of *Parodiolyra* in having a female lemma surface pitted with round excavations, rather than entirely smooth; however, all four species have some pitting on the female palea. In *P. lateralis*, *P. luetzelburgii* (Pilger) Soderstrom & Zuloaga, and *P. ramosissima* (Trinius) Soderstrom & Zuloaga, the pits are restricted to the base and the apex, whereas the palea is uniformly pitted in *P. colombiensis*. In this respect *P. colombiensis* is similar to *Olyra micrantha* Kunth, a widespread South American species. However, they clearly differ from each other by the characters listed in Table 1. *Olyra* is polymorphic for pitted anthoecia. Excluding *O. micrantha*, 9 of the 23 currently recognized species of *Olyra* possess pitted female anthoecia, while the remainder have entirely smooth anthoecia.

Soderstrom and Zuloaga (1989) had already noted that *O. micrantha* is atypical in *Olyra* because its female spikelets disarticulate below the glumes, the pedicels of the female spikelets are slender at the apex, not thickened, and its glumes are separated by a conspicuous internode in female spikelets. We have observed that there are two disarticulation points in the female spikelet of *O.*

Table 1. Comparison of the five recognized species of *Parodiolyra*.

	P. luetzelburgii	*P. ramosissima*	*P. colombiensis*	*P. micrantha*	*P. lateralis*
Female spikelets (mm)	3–3.6	5–5.8	4.5–5	5.4–12.8	2–2.6
Awn development	unawned	unawned	unawned	awned	unawned
Lower glume	7–9-nerved	7–9-nerved	3-nerved	5-nerved	5–7-nerved
Upper glume	5–7-nerved	5–6-nerved	5-nerved	3–5-nerved	5–7-nerved
Lemma	smooth	smooth	pitted	pitted	smooth
Palea	pitted toward the apex and base	pitted toward the apex and base	pitted throughout	pitted throughout	pitted toward the apex and base
Microhairs	+	+	+	+	–
Male spikelets (mm)	4.1–5.1	3.5–4.3	4	7.4–9.3	3–4
Male spikelets, glumes	–	–	+	–	+
Distribution	Guianas, N Brazil, Venezuela	E Brazil	Colombia	South America	Central and South America
Blades (cm)	8–11 × 1.6–3.1	3.6–13 × 0.9–1.7	8–14 × 1.7–3.6	13–32(–55) × 2.4–11.5	2–5 × 0.5–1.3
Inflorescence (cm)	5–8	3–8	6–10	10–32	1.2–3

micrantha, one below the anthoecium and the other one below the glumes. Female spikelets without a developed caryopsis disarticulate below the glumes, although not as readily as in *P. colombiensis* (as judged from herbarium specimens). However, in female spikelets with mature caryopses, the anthoecium disarticulates leaving behind the empty, somewhat persistent glumes.

Olyra species tend to have relatively large female spikelets and *Parodiolyra* small ones. Comparing their spikelet size by means of female anthoecia (since that eliminates having to deal with awns, which tend to be highly variable in length within the same species), *Olyra* species range from 5.5 mm in *O. wurdackii* Swallen and *O. latispicula* Soderstrom & Zuloaga to 15.8 mm in *O. holttumiana* Soderstrom & Zuloaga. In *Parodiolyra* female anthoecia vary from 1.9 mm in *P. luetzelburgii* to 3.3 mm in *P. ramosissima* (Soderstrom & Zuloaga, 1989). The female anthoecia of *O. micrantha* (2.8–3.5 mm) and *P. colombiensis* (3.4 mm) fall within the range of *Parodiolyra*. It seems likely that the thickened female pedicels of *Olyra* species are functionally related to their larger spikelets, especially since their much smaller male spikelets have slender pedicels, similar to the slender female and male pedicels of *Parodiolyra*.

Soderstrom and Zuloaga (1989) did not investigate the hilum type of *O. micrantha* as an aid in the elucidation of the taxonomic position of this species. We have done so now, and the hilum is approximately $^{3}/_{5}$–$^{1}/_{5}$ as long as the caryopsis (Venezuela: *Davidse & Huber 22984*, *Davidse et al. 18746*; Paraguay: *Zardini & Guard 15512*, *Zardini & Velásquez 15757*, *Zardini & Aguayo 15842*, all MO). In contrast, in all other *Olyra* species the hilum is approximately as long as the caryopsis.

On the basis of all these characters, it seems more consistent to include *O. micrantha* in *Parodiolyra*, and we make this transfer here. Primarily because they share pitted female lemmas, *P. micrantha* and *P. colombiensis* are probably more closely related to each other than to any other species in the genus.

Parodiolyra micrantha (Kunth) Davidse & Zuloaga, comb. nov. Basionym: *Olyra micrantha* Kunth, in Humboldt, Bonpland & Kunth, Nov. Gen. Sp. 1: 199. 1816. TYPE: Venezuela. Amazonas: Maypures rapids of the Orinoco River, *Humboldt & Bonpland s.n.* (holotype, P, microfiche, fragment US-2877940).

Key to the Species of *Parodiolyra*

1a. Female and male spikelets awned; male spikelets 7.4–9.3 mm long; blades 13–32 cm long; inflorescence 10–32 cm long ...... *P. micrantha*

1b. Female and male spikelets without awns; male spikelets 3.5–5.1 mm long; blades 2.5–14 cm long; inflorescence 3–10 cm long.

  2a. Lemma of female spikelets pitted; lower glume of female spikelets 3-nerved .... *P. colombiensis*

  2b. Lemma of female spikelets smooth; lower glume of female spikelets 5–9-nerved.

    3a. Female spikelets 2–2.6 mm long, black at maturity; female lemma glabrous, obtuse; leaf blades 2.5–5 cm long .... *P. lateralis*

    3b. Female spikelets 3–5.8 mm long, light-colored at maturity; female lemma with conspicuous bicellular microhairs at the apex, acute; leaf blades 4–13 cm long.

      4a. Female spikelets 3–3.6 mm long, 1.5–1.7 mm wide; male spikelets 4.1–5.1 mm long; panicles with the lower branches whorled; ovary glabrous; lower margins of the blades long-ciliate .... *P. luetzelburgii*

      4b. Female spikelets 5–5.8 mm long, 1.9–2.8 mm wide; male spikelets 3.5–4.3 mm long; panicles with the lower branches alternate or opposite; ovary pilose toward the summit; lower margins of the blades glabrous or scabrous, not ciliate .... *P. ramosissima*

Acknowledgments. We thank the Herbario Amazónico Colombiano and the Tropenbos Program for making collections of the new species available for our study, María Victoria Arbelaez for her attempt to re-collect the species, Ricardo Callejas Posada for help with communications, and Vladimiro Dudás for the excellent illustration.

Literature Cited

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